

REMARKS

Applicants respectfully request further examination and reconsideration in view of the above amendments and the arguments set forth fully below. In the Office Action mailed November 28, 2006, claims 1-2, 4-26 and 28-46 have been rejected. In response, the Applicants have submitted the following remarks and amended claims 1, 16, 28, 42 and 46. Accordingly, claims 1-2, 4-26 and 28-46 are still pending. Favorable reconsideration is respectfully requested in view of the amended claims and the remarks below.

Rejections Under 35 U.S.C. §112

Claims 1, 2, 4-15 and 42-46 have been rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. With respect to claim 1, it is stated within the Office Action that the preamble recites a method of acquiring pulse oximetry and electrocardiogram signals, however the claimed elements are directed to configuring a transducer and attaching the transducer to a patient which does not result in acquiring pulse oximetry in electrocardiogram signals. That is, although the claim sets forth the signal transducer is “configured to” acquire data, no positively recited steps of acquiring are set forth. By the above amendment, the Applicants have amended claim 1 to include a positive step of acquiring the pulse oximetry signal and the electrocardiogram signal with the single electrode. For at least these reasons, the Applicant respectfully submits that the rejection under 35 U.S.C. §112, second paragraph, of claim 1 be withdrawn.

Claims 2 and 4-15 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable under 35 U.S.C. §112, second paragraph.

Application No. 10/732,985
Amendment Dated February 28, 2007
Reply to Office Action of November 28, 2006

Accordingly, claims 2 and 4-15 are also allowable as being dependent upon an allowable base claim.

With respect to claims 42 and 46, it is stated within the Office Action that these claims recite the limitations “the pulse oximetry signal” in lines 1-2 and “the reference electrocardiogram” in lines 3-4, and that there is insufficient antecedent basis for these limitations in the claim since no signals have been acquired in the method steps. The Applicants respectfully disagree with this rejection, and point the Examiner to the “attaching” step of each of the independent claims 42 and 46, wherein line 6 of claim 42 and 46 the limitation includes a pulse oximetry signal being acquired and a non-reference electrocardiogram signal being acquired. Therefore, the Applicants respectfully request that the rejections under 35 U.S.C. §112, second paragraph, with respect to claims 42 and 46 be withdrawn.

Rejections Under 35 U.S.C. §102

Claims 1-9, 13-18, 20, 22-23, 27-33, 35, 37-38 and 42-46 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0188205 to Mills (hereinafter Mills I). Applicants respectfully disagree with this rejection.

Mills I teaches a device and method for non-invasive continuous determination of physiologic characteristics. Mills I includes a device for the non-invasive monitoring of a physiologic characteristic including a tissue probe having a radiation emitter and a radiation detector configured to receive the radiation after absorbents through the patient's blood, a position sensor for determining the relative height of the probe compared to a level corresponding to the patient's heart, and a controller for computing the physiologic characteristics of the patient's blood based on the absorbance of the first wave length of radiation and the relative height of the probe. It is also stated in Mills I

that the probe further includes ECG leads (Mills I, paragraph 13). However, it is also taught in Mills I that while the probe 24 may include a single ECG electrode 28 (Mills I, paragraph 77), the teaching of Mills I indicates that those ECG probes 28 included in the probe 24 are utilized to collect non-reference ECG signals only. Mills I teaches the use of appropriate probes placed opposite digits in Figures 19 and 20, on opposite extremities in Figures 9 and 10, or placed on a digit as is shown in Figure 1 (Mills I, paragraph 129). However, Mills I does not teach a single transducer having a single electrode, wherein the single electrode is configured to collect either a reference or non-reference ECG signal. Furthermore, Mills I does not teach a neural-muscular transmission device configured such that artifacts in the pulse oximetry signal are avoided.

In contrast to the teachings of Mills I, the present invention includes a transducer 50, preferably a pulse oximeter transducer including an electrode 55 that functions as a reference or non-reference electrode for one or more ECG signals (present invention, paragraph 24, Figure 2). In the present invention, in simplified instruments that forego the use of a reference electrode, the electrode 55 can act as any suitable terminal of an ECG lead. The Applicants respectfully point the Examiner to paragraph 24 and Figure 2 of the present invention, which succinctly outlines the single transducer 50 and single electrode 55, wherein the electrode of the present invention is configured to receive either the reference or non-reference ECG signal, depending upon its placement on the patient referring to paragraph 36 of the present invention, it is clear that the NMT device 300 and the transducer 50 can be connected to the monitoring system 20 by a single cable 53. This configuration operates such that the NMT device 300 and the transducer do not interfere with one another. Combining these two device into a single unit allows measurements to be taken on only one hand of the patient, thus attenuating the consequent artifacts in the ECG signals and/or the SpO₂ signals.

The independent claim 1 is directed to A method of acquiring pulse oximetry and electrocardiogram signals from a patient, the method comprising configuring a single transducer and attaching the single transducer to a patient with a neural-muscular transmission device, wherein the single transducer includes a single electrode such that when the single transducer is attached to the patient, the signal transducer is configured to acquire a pulse oximetry signal with the single transducer and acquire an electrocardiogram signal with the single electrode, wherein the acquired electrocardiogram signal is either one of a reference electrocardiogram signal or a non-reference electrocardiogram signal, and acquiring the pulse oximetry signal and the electrocardiogram signal with the single electrode, wherein use of the neural-muscular transmission device effectuates an artifact free pulse oximetry signal. As discussed above, Mills I does not teach a neural muscular transmission device (NMT) configured such that use of the NMT avoids artifacts in the pulse oximetry signal. For at least these reasons the independent claim 1 is allowable over Mills I.

Claims 2, 4-9 and 13-15 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over Mills I. Accordingly, claims 2, 4-9 and 13-15 are also allowable as being dependent upon an allowable base claim.

The independent claims 16, 28, 42 and 46 have been amended to include the additional limitations included independent claim 1. For the same reasons as argued above with respect to the independent claim 1, the Applicants respectfully submit that the independent claims 16, 28, 42 and 46 are also allowable over Mills I.

Claims 17-18, 20, 22-23, 29-33, 35, 37-38 and 43-45 are dependent upon the independent claim 16, 28 and 42. As discussed above, the independent claims 16, 28 and 42 are allowable over the teachings of Mills I. Accordingly, claims 17-18, 20, 22-23, 29-33, 35, 37-38 and 43-45 are also allowable as being dependent upon an allowable base claim.

Application No. 10/732,985
Amendment Dated February 28, 2007
Reply to Office Action of November 28, 2006

Claims 1, 10 and 13 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0109772 to Mills (hereinafter Mills II). The Applicants respectfully disagree with this rejection.

Mills II is a method for non-invasive continuous determination of physiological characteristics. Likes Mills I, Mills II does not teach the NMT. For at least these reasons, the independent claim 1 is also allowable over Mills II.

Claims 10 and 13 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Mills II. Accordingly, claims 10 and 13 are also allowable as being dependent upon an allowable base claim.

Rejections Under 35 U.S.C. §103

Claims 10, 24 and 39 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mills I as applied to claims 1, 16 and 28, and further in view of U.S. Patent No. 5,957,860 to Olive (hereinafter Olive). Claims 10, 24 and 39 are dependent upon the independent claims 1, 16, and 28. As discussed above, the independent claims 1, 16 and 28 are allowable over the teachings of Mills I. Accordingly, claims 10, 24 and 39 are also allowable as being dependent upon an allowable base claim.

Claims 11, 12, 25, 26, 40 and 41 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mills I, in view of Olive as applied to claims 10, 24 and 39 above, and further in view of U.S. Patent No. 5,025,791 to Niwa (hereinafter Niwa). Claims 11, 12, 25, 26, 40 and 41 are dependent upon the independent claims 1, 26 and 28. As discussed above, the independent claims 1, 16 and 28 are allowable over the teachings of Mills I. Accordingly, claims 11, 12, 25, 26, 40 and 41 are also allowable as being dependent upon an allowable base claim.

Claims 19, 21, 34 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mills I as applied to claims 16 and 28 above, and further in view of U.S. Patent 6,023,541 to Merchant et al. (hereinafter Merchant). Claims 19, 21, 34 and 36 are dependant upon the independent claims 16 and 28. As discussed above, the

Application No. 10/732,985
Amendment Dated February 28, 2007
Reply to Office Action of November 28, 2006

independent claims 16 and 28 are allowable over the teachings of Mills 1. Accordingly, claims 19, 21, 34 and 36 are also allowable as being dependent upon an allowable base claim.

For these reasons, Applicants respectfully submit that all of the claims are now in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at 414-271-7590 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

ANDRUS, SCEALES, STARKE & SAWALL, LLP

By Christopher M. Scherer
Christopher M. Scherer
Reg. No. 50,655

Andrus, Sceales, Starke & Sawall, LLP
100 East Wisconsin Avenue, Suite 1100
Milwaukee, Wisconsin 53202
Telephone: (414) 271-7590
Facsimile: (414) 271-5770